



Ontario

Ministry of
Agriculture
and Food

ORDER NO. 91-053

SEPTEMBER 1991

AGDEX 210
14

Factsheet

FRUIT TREES IN THE HOME GARDEN

(Revision of Factsheet "Fruit Trees in the Home Garden," May 1981)

K. R. Wilson, Plant Industry Branch, Clarksburg
G. Tehrani, Horticultural Research Institute of Ontario, Vineland Station

Growing fruit trees in the home garden can be a very interesting and challenging hobby. There are several things that you should know about fruit tree culture that will improve your chances of success and make your hobby more rewarding.

Each kind of fruit tree, even each cultivar (variety), has its own climatic adaptations and limitations. Stone fruits such as peach, sweet cherry and plum will perform best in the warmer regions of the province. When these fruits are grown outside their climatic range, the minimum air temperatures in winter may fall below the survival limit of the tree (approximately -25°C) and/or spring frosts may kill the blossoms on these early blooming fruits. Apple and pear can be grown successfully in a wide range of temperatures, yet, minimum air temperatures below -30°C can be harmful to the tree. Even though apple and pear bloom about two weeks later than the stone fruits, spring frost still can be a problem during the bloom period.

To determine if a tree fruit will prosper in your area, consult catalogues from the various fruit tree nurseries. For information on pome fruits (apple, pear), refer to OMAF Factsheet, *Apple and Pear Varieties for the Home Garden*, Agdex 210/14, available at your local OMAF County Office.

LOCATION WITHIN THE GARDEN

Fruit trees should be carefully located in the garden for maximum exposure to full sunlight. Wet spots or poorly drained areas should be avoided as well as windy corners or areas where snow accumulations may be excessive. Fruit trees will grow well on a wide range of soil types if the soil is adequately drained. Tile underdrains improve natural drainage. Ridging and elevating the fruit-tree area above the lot level improves depth of rooting and water movement in heavy soils. Apricot, cherry and peach are extremely sensitive to imperfectly drained soils and generally perform best on well-drained sandy loam soils.

SOIL MANAGEMENT

The soil should be thoroughly prepared before planting. Ploughing or digging up the soil and incorporating organic matter is helpful. Well-rotted manure, compost, or peat moss will improve the soil structure and increase the moisture-holding capacity. After planting, other organic matter such as old straw, hay, lawn clippings, sawdust and

wood shavings may be applied as a mulch under the tree. The mulch, which should be deep enough to suppress weeds and conserve moisture, should be kept away from the tree trunks and extend out to the spread of the limbs. When using mulch it is recommended that a mouse guard be placed on the tree to prevent rodent damage to the tree trunk.

BUYING FRUIT TREES

Well-grown, one-year old trees are preferable to poorly grown two-year-old trees. Peach and cherry should be planted as one-year-old trees only. One-year-old trees should have a well-grown main stem, while two-year-old trees should be well branched. Both should have good fibrous root systems.

CHOICE OF CULTIVARS

There are innumerable fruit cultivars for home garden use. You can start with some of the common commercial cultivars, but later you may wish to try lesser-known cultivars that may have a special purpose, such as good freezing attributes, or some other special quality. The cultivars listed below are arranged in order of maturity and give a range of season and quality:

Apple: Quinte*, Vista Bella, Yellow Transparent (Lodi)*, Red Melba*, Wealthy*, Summerred, Paulared, McIntosh**, Spartan, Cortland, Empire, Delicious**, Idared, Golden Russet, Golden Delicious**, and Crispin (Mutsu).

Scab Free: Novamac, Prima, Freedom, Liberty, Nova Easygro, Macfree, Priscilla, and Novaspy.

There are many more cultivars available that are immune to apple scab and other related diseases. For further information on these selections consult OMAF Factsheet, *Disease Resistant Apple Cultivars*, Agdex 210/30.

Apricot: Harcot, Goldcot, Velvaglo, Veecot, Hargrand, Vivagold, Harlayne, and Morden 604*.

Cherry: Tart or Sour: Northstar*, Montmorency, and Meteor*.

Sweet: Black — Viva, Valera, Venus, Bing, Viscount, Vogue, Stella (self-fruitful), Hedelfingen, and Van.

Sweet: White — Vega, and Victor.

Peach: Candor, Harrow Diamond, Garnet Beauty, Sunhaven, Redhaven, Veecling, Reliance*, Harbrite, Vivid, Newhaven, Veeglo, Canadian Harmony, Loring, Vanity, Cresthaven, Harcrest, and Redskin.

Pear: Clapp, Bartlett, Flemish Beauty*, Anjou, and Bosc.

Plum: **Japanese:** Early Golden, Shiro, Burbank, and Vanier.

European: Voyageur, Veeblue, Stanley, Bluefre, Damson, Valor, Italian, Verity, and Vision.

* Known to have superior winter hardiness.

** Compact-growth forms or spur types available.

ROOTSTOCKS

Fruit trees consist of two parts, a scion (pronounced sign) and a rootstock. The scion or fruiting cultivar is grafted or budded onto a chosen rootstock and forms the aboveground part of the tree. The new tree is the same cultivar as the tree from which the buds were taken, and will produce fruit of that cultivar.

In the home garden a dwarfing rootstock, when available, is preferred, since it produces a more compact fruit tree that will bear fruit earlier in its life. Trees of this stature are easier to prune, spray, pick and require less space to grow.

The most common of the size-controlling rootstocks for apple are M.9 (Malling 9), M.26, and Mark. They produce trees about 25%, 35% and 40% of full size, respectively. The semi-dwarfing rootstocks which produce trees of about 75% of standard size are MM.106 (Malling Merton 106), M.7, and MM.111. In the colder regions, it is recommended that these dwarfing rootstocks be mulched for winter protection of the root system.

Several Quinces are available as a dwarfing rootstock for pear trees. The threshold low winter temperature for Quince is about -23°C and thus it is adaptable to warmer regions of the province. Quince A produces a tree 30-60% the size of a standard and is the strain most readily available. Quince C is more dwarfing and precocious than Quince A. Both these rootstocks require staking for the life of the tree to support a weak trunk that may break at the bud union as a result of a heavy fruit load. Bosc and standard strains of Bartlett are incompatible with Quince A when budded directly to it. It is necessary to use an interstem such as Anjou, Old Home, or Hardy, with Quince A root. Anjou, Flemish Beauty and Swiss Bartlett are directly compatible with Quince and do not require an interstem. In colder districts of Ontario, only pear-seedling rootstocks should be used rather than quince dwarfing stocks.

There are no commercially acceptable dwarfing rootstocks for cherry, plum, peach or apricot that are comparable to those presently available for apple and pear.

Peaches are commonly grown on seedling rootstocks. Certain plum rootstocks are occasionally recommended for peaches and apricots because they tolerate imperfectly drained soils. St. Julien A or Brompton plum rootstocks fall in this category, and in addition, they induce a modest amount of dwarfing.

Myrobalan is the most popular standard rootstock for plum, but St. Julien A and Brompton, both of which offer some size control, are also used. The latter rootstocks are not as tolerant to drought as myrobalan seedlings.



Figure 1. Four-year-old Cortland apple tree on Malling 26 rootstock, supported by a post, and protected from mouse injury by a wire screen. Note the straw mulch under the tree.

Seedlings of Mazzard (*Prunus avium*) and Mahaleb (*Prunus mahaleb*) are the two rootstocks used commercially for cherries. Sweet and tart cherry cultivars propagated on Mazzard rootstocks have better survival and longevity, particularly on imperfectly drained soils. In general, Mazzard stocks are recommended for sweet cherry irrespective of soil type and drainage, and for tart cherry where drainage may be a problem.

Tart cherry, peach, apricot and plum on standard rootstocks attain a smaller size than similar trees of apple, sweet cherry and pear, and are easier to contain. Besides rootstocks, other factors that reduce tree size in all tree fruits are pruning, cropping, and adverse soil conditions such as gravel, hardpan or clay fill.

In recent years, compact-growth forms or spur types have been developed in some cultivars of apple, sweet cherry and peach. These self-restricting growth forms alone or in combination with dwarfing rootstocks provide another source of plant material adapted to the confined space of the home garden.

POLLINATION

With tart cherry, apricot and peach, a single tree will crop well when planted in the home garden. These fruits are referred to as "self-fruitful," and will set fruit with their own pollen. Those which are "self-unfruitful" will not bear fruit unless cross-pollinated with pollen from another cultivar. Apple, pear, plum and sweet cherry are good examples of self-unfruitful fruits which require pollen from another cultivar for fruit set. When any of the above fruits are grown, two or more cross-compatible cultivars must be planted together.

A cultivar selected as a pollenizer (pollen source) should have a good overlap of bloom with the main cultivar. Pollen from pear, Japanese and European plum and cherry cultivars will not pollinate each other. Further, tart cherry pollen is not effective for sweet cherry, nor is Japanese for European plum cultivars. Apple cultivars such as Gravenstein, Crispin (Mutsu), Rhode Island Greening, Jonagold and Spigold have an uneven number of chromosomes (triploid) and will not pollinize each other or any other cultivar. A pollenizer should be provided for these cultivars. In such cases, a second pollenizer should be provided for the first cultivar pollinating a triploid one.



Figure 2. Branched apple tree one year after planting. Left, before pruning, and right, after pruning

All sweet cherry cultivars except Stella are self-unfruitful. Further, the pollen of some sweet cherries will not fertilize certain other cultivars. Stella will fertilize all sweet cherry cultivars.

In Japanese plums, Burbank is a satisfactory pollenizer for early Golden and Shiro, and Burbank and Early Golden are pollinated by Shiro. In European plums, Stanley will pollinate Bluefre, Valor, Veeblue, Verity and Vision. Further, Valor and Verity will pollinate each other. Stanley, Damson and Voyageur are self-fruitful and will crop when planted alone. The main commercial pear cultivars are self-unfruitful.

PLANTING

Planting in the spring rather than in the fall is recommended, especially in the colder districts of the province. Plant without delay as soon as the ground can be worked. If you are planting close to buildings, visualize the final size of the tree and leave adequate distance between it and the building. Further, remember that sprays or dusts may leave a residue on walls, windows, or laundry.

Before planting the tree, trim off all damaged or dead root ends. Cut back to healthy root wood and bark. Dig a hole, not too deep, but large enough to accommodate the root system without crowding. Keep the topsoil separate to place over and around the roots. **DO NOT PUT FERTILIZER OR MANURE IN THE PLANTING HOLE.** It is also a good idea to place a sturdy post within 20 cm of the newly planted tree and tie the tree lightly to it. This post can be used to keep the tree upright and straight and serves as an anchor for the trunk.

To prevent scion rooting, dwarf trees must be planted so that only 2 to 3 cm of rootstock shank is above the soil line, otherwise, the scion cultivar may root above the graft union, resulting in a loss of the dwarfing effect.

Tramp the soil firmly around the roots. Leave a slight depression to catch rain water or for watering during the first summer. Water thoroughly after planting. For mouse protection, place a 6 mm mesh galvanized wire cylinder or other type of tree guard around the trunk after planting. The guard should extend 5 to 8 cm below and at least 30 cm above the surface of the ground.

FERTILIZING THE TREE

If the fruit trees are grown in a good garden soil, most trees will not require fertilizer before they come into bearing. Once in production, fruit trees benefit from light applications of fertilizer in early spring each year. A good rule of thumb for trees grown in an average lawn is to apply to each tree 300 g of a 10-10-10 mixture, per year of the tree's age. In most instances, no more than 4.5 kg of complete fertilizer, (e.g., 10-10-10 mixture) will be required per mature tree. Fruit trees growing in a well maintained lawn may not require additional fertilizer beyond what the lawn receives. Applications of nitrogen fertilizer to the lawn in September should be withheld to avoid stimulating late tree growth which could be severely damaged by winter cold.

For trees growing in worked gardens, the rate of fertilizer is usually halved. Also remember that the soil under and around the tree should not be cultivated later than mid-July each year or late growth (susceptible to winter injury) could be a problem.

As mulch decays, it may be advisable not to apply fertilizer for a year or two. Do not apply lime at any time, unless it is recommended by a Soils Specialist. Beware of extremes in the amounts or types of fertilizer used. Excessive levels or an improper balance of nutrients can lead to poor-quality fruit and serious winter injury or disease problems.

TRAINING AND PRUNING

The transplanted tree should be heavily pruned immediately after planting and before growth starts. Without this initial pruning to balance the tree, more leaves will develop than there is root system to support and the tree may not grow well or even die during the first summer.

In general, apricot, cherry, peach, and plum trees may be pruned after planting to a single whip, and cut off (headed) at about 90 cm above the soil. On peaches, if some well-developed branches exist, two or three of these may be cut back and left as short stubs of about two buds in length.

Figure 2, on the left shows a well-branched apple tree in early spring one year after planting as a single whip and headed at approximately 90 cm. On the right, is the same tree pruned for the upcoming season. One-quarter of the extension growth made by the central leader has been removed. Three to five side (scaffold) branches have been retained. All other branches were removed completely with clean, flush cuts at the trunk. Note that the retained branches are distributed vertically and spirally around the trunk, and are growing out at a wide angle to it. Wide-angled limbs are structurally stronger than those which have a narrow crotch angle. This type of limb is preferred with all fruit trees. Limbs with very narrow and thus poor crotch angles should be removed as soon as they are identified.

The modified central-leader type of training is the simplest and is also compatible with the desired shape for fruit trees. In this tree form one single main trunk is encouraged to grow up through the center of the tree and it is similar to the shape of a Christmas tree. Until the tree comes into bearing, shape it by pruning very lightly, each year removing narrow angles, dead or broken branches, and laterals pointed into the center of the tree or competing with the leader. Excessive pruning can delay fruiting.

Bearing trees must be pruned annually, removing weak or dead wood and crowded branches in the interior and top of the tree. All cuts should be made flush with the parent limb. Wound dressing is usually not necessary unless a heavy cut has been made that is larger than 6 cm in diameter. Suckers, especially those arising from the rootstock, should be removed. All pruning should be done in early spring. Trees should be kept in a good state of growth by soil management, but not by heavy pruning.

PEST CONTROL

Insecticides and fungicides should be applied to fruit trees **only** when there is a risk of damage from a specific insect or disease. The gardener must learn what these specific risks are, and the materials and amounts to be used for protection against them. When using insect and disease control materials in the home garden always follow all label instructions and obey all label precautions. An excellent spray guide, OMAF Publication 64, *Insect and Disease Control in the Home Garden*, is available at your local OMAF County Office.

FRUIT THINNING

It is usual for a number of young fruits to drop off during the spring and early summer. This natural thinning is often referred to as the "June drop." With most cultivars, too many fruits will likely still remain on the tree. It is often necessary to remove the excess fruit by hand when it is still very small. Fruit thinning reduces limb breakage, increases fruit size, improves color and quality of remaining fruit, and stimulates flower initiation for next year's crop. To be effective, thinning should be completed shortly after the "June drop." Most apple, pear, and peach cultivars should be thinned until the fruit are no closer than 20 cm. Plum and apricot fruits should be far enough apart that they do not touch one another when mature.

HARVESTING

The home fruit grower can leave fruit on the tree until it reaches peak quality. Fully mature fruit will not keep long. Most pear cultivars should be picked when still firm but somewhat green in color. If left to ripen on the tree, they may turn brown and soft inside. To determine when an apple is ready to pick, look for: (1) the green color in the skin starting to turn yellow; (2) seed coats turning brown; (3) flesh texture changing from tough and pulpy to crisp and juicy; and (4) when picked with an upward motion, the fruit separates from the spur of the tree. Summer apples, plums and peaches may be left on the tree until nearly ready to eat. Cherries should be left until they reach their prime eating condition. Color, firmness and flavor are useful indicators in determining when fruit are ready to pick. Stored in the crisper of the refrigerator, or in other cool storage, the fruit can be enjoyed over a considerable period of time. One tree of most fruits will produce as much as the average family will eat fresh at picking time, with some to spare for canning or freezing.

